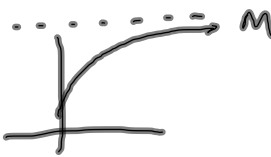


36. $\frac{dp}{dt} = k(M-p)$ 

a) $\frac{dp}{M-p} = k dt$

sep var

Integrate $\int \frac{1}{M-p} dp = \int k dt$

$-\ln|M-p| = kt + c$

$\ln|M-p| = (-kt + c)$

$|M-p| = e^{-kt} \cdot e^c = ce^{-kt}$

$P < M$

$M-p = ce^{-kt}$

$M - ce^{-kt} = p$

$M - Ae^{-kt} = p$


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b) $\lim_{t \rightarrow \infty} P(t) = \lim_{t \rightarrow \infty} M - Ae^{-kt} = M$ $e^{-kt} = \frac{1}{e^{kt}}$

c) when is pop growing fastest?

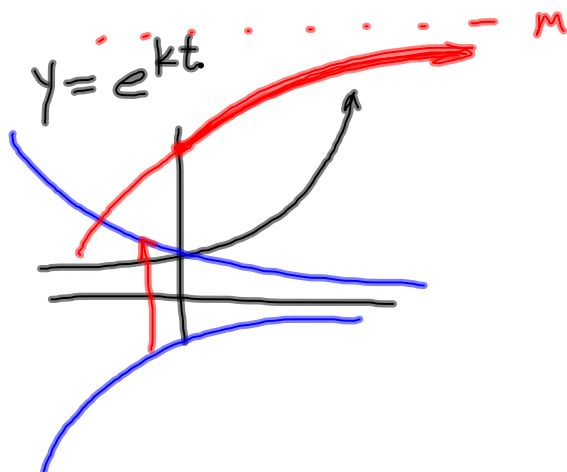
$\frac{dp}{dt} = k(M-p)$

biggest when p is smallest (when $t=0$)

d)  #36 no inflection point

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$$y = M - A e^{-kt}$$

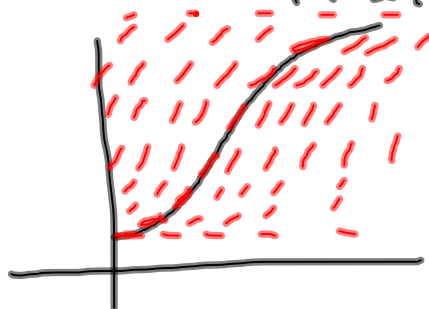


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27. $\frac{dp}{dt} = .006 P (200 - P)$

$$P = \frac{200}{1 + 24 e^{1.2t}}$$

$$A = \frac{200 - 8}{8} = 24$$



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